

WHAT IS CLAIMED IS:

1. A wiring board comprising:

a wiring laminate portion including dielectric layers containing a polymeric material and conductor layers laminated alternately so as to form a first main surface out of one of said dielectric layers; and

a plurality of metal terminal pads disposed on said first main surface,

wherein:

each of said metal terminal pads has a structure in which a Cu-plated layer is disposed on a side of said first main surface and an Au-plated layer is disposed in an outermost surface layer portion of said metal terminal pad, while an electroless Ni-plated layer having a P content not higher than 3% by weight is disposed as a barrier metal layer between said Cu-plated layer and said Au-plated layer.

2. A wiring board comprising:

a wiring laminate portion including dielectric layers containing a polymeric material and conductor layers laminated alternately so as to form a first main surface out of one of said dielectric layers; and

a plurality of metal terminal pads disposed on said first main surface,

wherein:

each of said metal terminal pads has a structure in which
a layer containing Cu is disposed on a side of said first main
surface and a layer containing Au is disposed in an outermost
surface layer portion of said metal terminal pad, while a layer
5 containing Ni which has a P content not higher than 3% by weight
is disposed as a barrier metal layer between said layer
containing Cu and said layer containing Au layer.

3. The wiring board according to claim 1, wherein said
10 electroless Ni-plated layer is an Ni-B-based electroless
Ni-plated layer.

4. The wiring board according to claim 1, wherein said
electroless Ni-plated layer is in direct contact with said
15 Au-plated layer, and said Au-plated layer is made of an
electroless reduction Au-plated layer.

5. The wiring board according to claim 1, wherein said
electroless Ni-plated layer has a thickness of from 2 to 7 μm
20 and the Au-plated layer has a thickness of from 0.03 to 0.1
 μm .

6. A wiring board comprising:
a wiring laminate portion including dielectric layers
25 containing a polymeric material and conductor layers laminated

alternately so as to form a first main surface out of one of
said dielectric layers; and

a plurality of metal terminal pads disposed on said first
main surface;

5 wherein:

each of said metal terminal pads has a structure in which
a Cu-plated layer is disposed on a side of said first main
surface and an Au-plated layer is disposed in an outermost
surface layer portion of said metal terminal pad, while a
10 platinum-metal-based electroless plated layer is disposed as
a barrier metal layer between said Cu-plated layer and said
Au-plated layer.

7. A wiring board comprising:

15 a wiring laminate portion including dielectric layers
containing a polymeric material and conductor layers laminated
alternately so as to form a first main surface out of one of
said dielectric layers; and

20 a plurality of metal terminal pads disposed on said first
main surface;

wherein:

each of said metal terminal pads has a structure in which
a layer containing Cu is disposed on a side of said first main
surface and a layer containing Au is disposed in an outermost
25 surface layer portion of said metal terminal pad, while a layer

containing platinum-metal is disposed as a barrier metal layer between said layer containing Cu and said layer containing Au.

8. The wiring board according to claim 6, wherein said
5 platinum-metal-based electroless plated layer is an electroless Pd-plated layer.

9. The wiring board according to claim 6, wherein said
10 platinum-metal-based electroless plated layer is an electroless Ir-plated layer, an electroless Pt-plated layer, an electroless Rh-plated layer or an electroless Ru-plated layer.

10. The wiring board according to claim 6, wherein said
15 platinum-metal-based electroless plated layer has a thickness of 0.05-1 μm .

11. A wiring board comprising:

20 a wiring laminate portion including dielectric layers containing a polymeric material and conductor layers laminated alternately so as to form a first main surface out of one of said dielectric layers; and

a plurality of metal terminal pads disposed on said first main surface,

25 wherein:

each of said metal terminal pads has a structure in which
a Cu-plated layer is disposed on a side of said first main
surface and an Au-plated layer is disposed in an outermost
surface layer portion of said metal terminal pad, while an
5 Ni-P-based electroless Ni-plated layer in contact with said
Cu-plated layer and a P-barrier electroless metal plated layer
for blocking or suppressing P-diffusion from said Ni-P-based
electroless Ni-plated layer to said Au-plated layer are
disposed as barrier metal layers between said Cu-plated layer
10 and said Au-plated layer, said P-barrier electroless metal
plated layer being disposed between said Ni-P-based
electroless Ni-plated layer and said Au-plated layer.

12. A wiring board comprising:

15 a wiring laminate portion including dielectric layers
containing a polymeric material and conductor layers laminated
alternately so as to form a first main surface out of one of
said dielectric layers; and

a plurality of metal terminal pads disposed on said first
20 main surface,

wherein:

each of said metal terminal pads has a structure in which
a layer containing Cu is disposed on a side of said first main
surface and a layer containing Au is disposed in an outermost
25 surface layer portion of said metal terminal pad, while a layer

containing Ni and P in contact with said layer containing Cu
and a layer containing Ni and B are disposed as barrier metal
layers between said layer containing Cu and said layer containing
Au, said layer containing Ni and B being disposed between said
5 layer containing Ni and P and said layer containing Au.

13. The wiring board according to claim 11, wherein said
P-barrier electroless metal plated layer is an Ni-B-based
electroless Ni-plated layer.

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14. The wiring board according to claim 11, wherein said
P-barrier electroless metal plated layer is a
platinum-metal-based electroless plated layer.

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15. The wiring board according to claim 11, wherein said
Au-plated layer is made of an electroless reduction Au-plated
layer.

16. The wiring board according to claim 11, wherein said
20 Ni-P-based electroless Ni-plated layer has a thickness of from
2 to 7 μm , and said P-barrier electroless metal plated layer
has a thickness of from 0.05 to 2 μm .

17. A wiring board comprising:
25 a wiring laminate portion including dielectric layers

containing a polymeric material and conductor layers laminated alternately so as to form a first main surface out of one of said dielectric layers; and

a plurality of metal terminal pads disposed on said first
5 main surface,

wherein:

each of said metal terminal pads has a structure in which a Cu-plated layer is disposed on a side of said first main surface, and an Au-plated layer is disposed in an outermost
10 surface layer portion of said metal terminal pad, while an Ni-B-based electroless Ni-plated layer in contact with said Cu-plated layer and an Ni-P-based electroless metal plated layer thinner than said Ni-B-based electroless Ni-plated layer are disposed as barrier metal layers between said Cu-plated
15 layer and said Au-plated layer, said Ni-P-based electroless metal plated layer being disposed between said Ni-B-based electroless Ni-plated layer and said Au-plated layer.

18. A wiring board comprising:

20 a wiring laminate portion including dielectric layers containing a polymeric material and conductor layers laminated alternately so as to form a first main surface out of one of said dielectric layers; and

a plurality of metal terminal pads disposed on said first
25 main surface,

wherein:

each of said metal terminal pads has a structure in which a layer containing Cu is disposed on a side of said first main surface, and a layer containing Au is disposed in an outermost surface layer portion of said metal terminal pad, while a layer containing Ni and B in contact with said layer containing Cu and a layer containing Ni and P thinner than said layer containing Ni and B are disposed as barrier metal layers between said layer containing Cu and said layer containing Au, said layer containing Ni and P being disposed between said layer containing Ni and B and said layer containing Au.

19. The wiring board according to claim 17, wherein said Ni-P-based electroless metal plated layer is not thicker than 2 μm .

20. The wiring board according to Claim 17, wherein said Au-plated layer is made of an electroless reduction Au-plated layer.

21. The wiring board according to Claim 17, wherein said Ni-B-based electroless Ni-plated layer has a thickness of from 2 to 7 μm , and said Ni-P-based electroless metal plated layer has a thickness of from 0.05 to 2 μm

22. A wiring board with solder members, which comprises:
the wiring board according to claim 1; and solder balls so that
said metal terminal pads are to be connected to
mother-board-side terminal pads through said solder balls
5 respectively, wherein said solder balls contains an Sn alloy
whose liquidus temperature is not lower than 200°C.

23. The wiring board with solder members according to
claim 22, wherein said solder balls are bonded directly to said
10 metal terminal pads respectively.

24. The wiring board with solder members according to
Claim 23, wherein said solder balls contain one of an
Sn-Ag-based alloy and an Sn-Cu alloy.

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25. The wiring board with solder members according to
Claim 23, wherein said solder balls contain an Sn alloy having
a Pb content not higher than 5% by mass.

20 26. A wiring board with solder members, which comprises:
the wiring board according to claim 6; and solder balls so that
said metal terminal pads are to be connected to
mother-board-side terminal pads through said solder balls
respectively, wherein said solder balls contains an Sn alloy
25 whose liquidus temperature is not lower than 200°C.

27. The wiring board with solder members according to claim 26, wherein said solder balls are bonded directly to said metal terminal pads respectively.

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28. The wiring board with solder members according to claim 27, wherein said solder balls contain one of an Sn-Ag-based alloy and an Sn-Cu alloy.

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29. The wiring board with solder members according to claim 27, wherein said solder balls contain an Sn alloy having a Pb content not higher than 5% by mass.

30. A wiring board with solder members, which comprises:
15 the wiring board according to claim 11; and solder balls so that said metal terminal pads are to be connected to mother-board-side terminal pads through said solder balls respectively, wherein said solder balls contains an Sn alloy whose liquidus temperature is not lower than 200°C.

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31. The wiring board with solder members according to claim 30, wherein said solder balls are bonded directly to said metal terminal pads respectively.

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32. The wiring board with solder members according to

claim 31, wherein said solder balls contain one of an Sn-Ag-based alloy and an Sn-Cu alloy.

33. The wiring board with solder members according to claim 31, wherein said solder balls contain an Sn alloy having a Pb content not higher than 5% by mass.

34. A wiring board with solder members, which comprises: the wiring board according to claim 17; and solder balls so that said metal terminal pads are to be connected to mother-board-side terminal pads through said solder balls respectively, wherein said solder balls contains an Sn alloy whose liquidus temperature is not lower than 200°C.

35. The wiring board with solder members according to claim 34, wherein said solder balls are bonded directly to said metal terminal pads respectively.

36. The wiring board with solder members according to claim 35, wherein said solder balls contain one of an Sn-Ag-based alloy and an Sn-Cu alloy.

37. The wiring board with solder members according to claim 35, wherein said solder balls contain an Sn alloy having a Pb content not higher than 5% by mass.